Decentralization and Political Institutions*

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December 2003

Abstract:

Does fiscal decentralization lead to more efficient governance, better public goods, and higher economic growth? This paper tests hypotheses of the theoretical literature that results of decentralization depend on features of political institutions. Using data from up to 95 countries for 25 years we show that the effect of fiscal decentralization strongly depends on two aspects of political centralization: 1) strength of national party system (measured by the age of main parties and fractionalization of government parties) and 2) subordination (whether local and state executives are appointed or elected). We find solid support for Riker's theory (1964): in developing countries, strong parties significantly improve the results of fiscal decentralization for economic growth, quality of government, and public goods provision. There is also some evidence from developing countries that administrative subordination of local to higher-level authorities improves decentralization results.

* We thank Alberto Alesina, Scott Gelhbach, Sergei Guriev, James Hines, Rory MacFarquhar, Gérard Roland, Andrei Shleifer, Konstantin Sonin, Barry Weingast, Luigi Zingales and seminar participants at the University of Michigan, Center for Economic and Financial Research, New Economic School, London Business School, University of California, Berkeley, Institute for Advance Study in Princeton, Harvard University and participants of CEPR-WDI 2003 Transition Conference for useful comments. The work of Ruben Enikolopov was in part supported by a program of the Bureau of Educational and Cultural Affairs, U.S. Department of State, administered by the American Council for International Education. The views expressed herein are of the authors and not necessarily shared by ECA or AC.

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1. Introduction

Modern economic literature has little doubt that economic decentralization affects the quality of government, economic growth, and efficiency of public goods provision. The effect of decentralization depends on economic and political incentives of local public officials. Economic incentives that help to align politicians' private interests with public goals are provided by such mechanisms as interjurisdictional competition (Tiebout, 1956; Qian and Roland, 1998; Maskin, Qian, and Xu, 2000) and fiscal autonomy (Jin et al., 1999; Qian and Weingast, 1997; and Zhuravskaya, 2000). Political incentives, i.e., local governments' accountability, are provided by political institutions, which ensure that careers of local politicians depend on whether they pursue efficient policies. In the absence of accountability, strong economic incentives at the local level may result in corruption, provincial protectionism, and capture by vested interests (Tanzi, 1996; Sonin, 2003, Cai and Treisman, 2004).

Even though it is a well-established fact that accountability of local public officials is necessary to prevent inefficient local policies in a decentralized economy, there is little agreement in the literature about what institutions can effectively ensure accountability.[1] On the one hand, democratic elections with free access to information and developed civil society may provide local governments with sufficient political incentives to guarantee efficient decentralization. This argument is based on the view that local governments are more accountable compared to the central governments (Seabright, 1996; Persson and Tabellini, 2000); and that they have to compete during elections on more concrete policy issues compared to the central governments where

[1] See Bardhan (2002) for an excellent survey of the literature.

many dimensions of policies are bundled together (Besley and Coate, 2003). On the other hand, democratic mechanisms fail in many developing and transition countries, leading to corruption and capture of the local governments. In addition, local governments accountable only to local constituencies in decentralized states have incentives to pursue policies that have negative externalities on other jurisdictions of the country, i.e. issuing money surrogates, erecting trade barriers, etc. (Musgrave, 1969; Oates, 1972; Tanzi, 1996; Besley and Coate, 2003). In these cases, strong administrative control of local by central authorities may help efficient economic decentralization (Blanchard and Shleifer, 2000). Beneficial effect of administrative centralization, however, requires lower probability of capture at the national compared to the local level.[2] Riker (1964) pointed out that the structure of party system is also extremely important for the effectiveness of local governments. He argued that strong national party systems mitigate externalities from local policies and are more affective in disciplining local politicians than administrative or constitutional arrangements. Thus, decentralization may have the opposite results in countries with different sources of local governments' accountability.[3]

This paper sheds light on this debate by evaluating the effects of fiscal decentralization on the quality of government, public goods provision, and economic growth, taking into account the structure of political institutions. In particular, we analyze how the level of political centralization changes the results of fiscal decentralization. Previous empirical literature on the effects of decentralization produced

[2] Bardhan and Mookherjee (1999) studied determinants of capture in different levels of government.
[3] Besley and Case (1995) provide evidence of influence of political parties on accountability using panel data for the US states.

mixed results that vary with countries and time periods.[4] This can be partly explained by the fact that it overlooked the importance of political institutions.

Using data from up to 95 countries for 25 years, we show that the effect of decentralization on economic growth, quality of government, and public goods provision strongly depends on the following two aspects of political centralization: 1) strength of the party system (measured by the age of main parties and fractionalization of government parties) and 2) administrative subordination (whether local and province-level politicians are appointed or elected). We find solid support for Riker's theory in developing and transition countries: strong party systems substantially improve the results of fiscal decentralization. In contrast, opposite to Riker's prediction in developed countries decreased age of main parties increases efficiency of decentralization, while results based on government fractionalization are unrobust. The negative effect of party age can be attributed to a decrease in political competition at the national level. In addition, we find some evidence that subordination of local authorities to higher-level governments improves the effect of decentralization on growth and public goods provision both in developing and developed countries and on government quality in developing countries. Most of the results come from cross-section of countries.

[4] Fisman and Gatti (2002) and de Mello and Barenstein (2001) found negative effect of decentralization on corruption; Treisman (2000) reported no relationship. Zhang and Zou (1998) reported negative effect of decentralization on provincial growth in China. Jin et al. (1999) showed that this relationship is positive once one filters out cyclical effects. Lin and Liu (2000) confirmed this result. Akai and Sakata (2002) reported positive effect of decentralization on growth of US states in early 1990s. Xie et al. (1999) showed no long-term relationship between these variables in the US for 50 years. Woller and Phillips (1998) found no link between decentralization and growth in developing countries. In contrast, Davoodi and Zou (1998) reported negative, marginally significant, relationship in developing countries and no effect in developed countries. Robalino et al. (2001) found negative cross-country relationship between decentralization and infant mortality. Zhuravskaya (2000) reported positive effect of decentralization on healthcare and education outcomes in Russian municipalities.

Therefore, we cannot rule out the possibility that unobserved cross-country heterogeneity accounts for the results.

The remainder of the paper is organized as follows. Section 2 presents hypotheses. Section 3 describes the data. Section 4 describes the methodology. In section 5, we present the results and discuss their robustness. In section 6, we summarize and interpret our empirical findings. Conclusions follow in section 7.

2. Hypotheses and the measures of political institutions

The theoretical argument first made by Riker (1964) that party systems - the strength of national parties and the relationship between the national and subnational parties – are important determinants of political incentives of the local governments, is behind our first hypothesis. In the case of strong political parties, career of politicians in the local government depends on their party's political and financial support to get reelected, as well as on the possibility of promotion to the national government. National governing parties, in turn, are interested in supporting local politicians whose policies do not impose significant negative externalities on other jurisdictions in the country, and, thus, on overall national performance. Therefore, strong parties provide political incentives for local politicians to conduct efficient policies and help to internalize externalities of local policies.[5] Moreover, strong national party systems provide political incentives for local governments irrespective of whether local politicians are appointed or elected. Even when local politicians do not need support during elections, career concerns play an important role (Maskin, Qian, and Xu, 2000).

[5] This effect, however, may be attenuated by a weak link between national and regional parties when national parties do not have much influence over regional politicians. Uslaner (2000) argues that Canada provides an example of weak link between national and regional parties. The data available do not allow us to take into account the relationship between national and regional parties.

The best available proxies for the strength of party systems are the age of main parties (the average age of the two main governmental parties and the main opposition party) and fractionalization of governing parties (the probability that two members of parliament picked at random from governing parties belong to different parties). An assumption behind the first measure is that older parties are stronger than younger ones (Huntington, 1968). Higher age of main parties indicates more stable party system important for career concerns because local politicians take the stability of their party into account when making decisions on effort allocation to career advancement. An assumption behind the second measure is that low fractionalization of government parties indicates that government consists of a small number of strong parties each having substantial weight in policy decisions, while high fractionalization is an indicator of many relatively weak parties each having small impact on policies. The motivation behind this measure is that the relative political weight of local politician's party in national policy-making is an important factor in his career decisions.[6]

Both of these measures are highly imperfect. The age of main parties may reflect institution building processes in young countries (that can affect decentralization outcomes) rather than the party strength. Fractionalization of government parties as a measure of party strength has even more serious drawbacks. First, the differences in fractionalization of parties across countries depend on differences in the degree of geographical segregation of voters with different political preferences (for instance, ethnic groups). Efficiency of fiscal decentralization may also be affected by geographical

[6] We take fractionalization of governing parties rather than fractionalization of parliament as one of the two main proxies for the party strength because it is more closely related to career concerns. Fractionalization in small opposition parties and the number of independent members of parliament has little effect on local politicians' career concerns determined by political weights of their parties. Nonetheless, the results are robust to using fractionalization of parliament as an alternative proxy.

voter segregation because in countries with high regional segregation decentralization is partly driven by central government's attempts to appease secessionist tendencies. Second, government fractionalization depends on the electoral rule and government system, both of which can have an independent effect on the efficiency of decentralization. Empirical strategies used to do make sure that our results are not driven by these alternative explanations are described in the sensitivity section 5.1.

To the best of our knowledge there is little quantitative comparative analysis of the strength of party systems, thus, it is hard to check whether the average age of main parties and fractionalization of government parties serve as good measures of party-system strength across countries. Literature, however, provides some estimates of over-time changes in the strength of parties for several countries. Therefore, we are able to check whether reported changes in the strength of party systems are reflected in behavior of our measures. For example, Mexico and Peru in 1990's experienced a substantial decline in party strength. A large number of independent candidates and candidates from recently formed new parties were elected as mayors, governors, and legislators (Camp, 1998; Carrion, 1998). Our data shows a significant decrease in the average age of main parties and a significant increase in the fractionalization of government parties in both countries at that time. Thus, in these cases our measures adequately capture the change in party strength. As is usual for cross-country comparisons, there are few countries for which the two measures perform very poorly as proxies of party strength, however.[7]

[7] Columbia, for example, has relatively low level of fractionalization and the highest average age of parties in the world. Under our assumptions this indicates a very strong party system. In reality, Columbia has one of the weakest party systems, since parties do not have control over their own party label which allows existence of different lists with the same party label. This is, however, a unique phenomenon to Colombia and neighboring Ecuador (Roland and Zapata, 2000).

We formulate testable prediction of Riker's theory: Young age of main parties and high fractionalization of government parties reduce efficiency of decentralization affecting economic growth, quality of government, and public goods provision outcomes.

An excessively strong party system can, however, be an indication of low political competition. In this case few parties (in the extreme case, only one party) dominate elections and constituencies have lower influence on the election outcome. In particular, when political competition is low, national parties become less concerned about the negative externalities of local policies pursued by party members. As a result, under certain conditions efficiency of fiscal decentralization may be reduced in a system with excessively strong parties. Diaz-Cayeros et al. (2003) argue that Mexico between 1930s and early 1990s provides an example of inefficiently small political competition.[8] This logic points to the alternative hypothesis that the age of main parties and low government fractionalization may undermine the efficiency of decentralization.

Argentina and Chile provide a good case study: both counties experienced fiscal decentralization with a substantial difference in outcomes. In the 1980s and 1990s, about 10% of total government revenues and expenditures were shifted from central to subnational budgets in Chile and 15% in Argentina. The level of decentralization, of course, has been substantially higher in federal Argentina that in unitary Chile.[9] It is well documented that in Chile transfer of expenditure responsibilities and financial resources from the central to municipal governments helped to improve provision of public health

[8] High age of parties may also indicate reduced accountability because it may reflect extremely loyal electorate that votes for the party regardless of its actual policies. Shachar (2003) studies the party loyalty of electorate.

[9] Subnational revenues increased from about 25% to about 40% in Argentina and from about 2% to 10% in Chile.

(Bossert et al., 2003) and education (Winkler and Rounds, 1996; Parry, 1997). In contrast, Argentine decentralization is viewed as one of the main reasons for macroeconomic destabilization and a large-scale economic crisis (Tommasi et al., 2001). This difference in the results of decentralization can be explained by the difference in levels of political centralization and national party strength of the two countries. Chile has strong party system with parties that are national in scope and have clear ideological distinctions (Londregan, 2000). National party affiliation in Chile is important not only for elections and career concerns of government officials at all levels, but it also plays an important role in NGOs such as universities and labor unions. In contrast, Argentine national political parties are weak and provincial parties dominate political arena both at the national and provincial level (Corrales, 2002). Thus, in Argentina, national political parties do not serve as a mechanism for disciplining subnational authorities and aligning incentives of local politicians with national objectives, while in Chile they do.

A basic premise of the representative democracy paradigm is that public officials should be elected. There are different views in the literature, however, on whether elections of local officials help the outcomes of decentralization. Seabright (1996) shows that under certain assumptions elected officials at the local level are more accountable compared to the central level. His conjecture motivates a testable proposition that the effect of decentralization on economic growth, quality of government, and public goods provision is better in the case of elected provincial and municipal executives compared to the case when they are appointed.

Blanchard and Shleifer (2000) built a model to illustrate that in transition economies the results of economic decentralization may conversely depend on presence

of local elections. An assumption behind their argument is that central governments have higher incentives to promote economic growth than local governments, as the latter are more likely to be captured.[10] In addition, direct administrative subordination internalizes externalities from local policies. This logic implies that the outcomes of decentralization would be better in the case of appointed provincial and municipal executives compared to the case when they are elected. Blanchard and Shleifer argued that the reason for why decentralization has become a major growth-promoting factor in China and an obstacle to growth in Russia is the difference in political centralization of these countries: In China decentralization has taken place under a tight administrative control of the communist party, while in Yeltsin's Russia economic decentralization was accompanied by large-scale political decentralization.

We test Seabright's and Blanchard and Shleifer's theories against each other using dummy variables that tell whether municipal and provincial executives are elected or appointed as measures of the administrative side of political centralization.[11]

3. Data

We use data on political institutions, fiscal decentralization, government performance, economic growth, outcomes of public goods provision, and various control variables for up to 95 countries for the years 1975-2000.[12] Not all the variables are available for all countries and all years: some regressions cover as few as 50 countries.

[10] This is a strong assumption (see discussion in Bardhan, 2002). Nonetheless, one can argue that competition for influence on authorities under certain distributions of wealth between and within federal jurisdictions may be much tougher at the central level than at the local level. This means that competition on the national market for capture can substantially reduce captors' rents leading to breakdown of capture market at the national level, while monopolistic rents of local captors remain intact.

[11] Choice between appointing and electing a local public official is a special case of choosing between delegating tasks to bureaucrat or politician (Alesina and Tabellini, 2003).

[12] The list of countries that constitute our sample is given in Table A1 in appendix.

The definitions and the sources of all variables are given in Table A2 in appendix. Summary statistics and correlations between the variables are also presented in appendix (Tables A3 and A4).

As the main measure of fiscal decentralization we use the share of subnational revenues in total government revenues. Robustness of results to using the share of subnational expenditures in total government expenditures as an alternative measure of fiscal decentralization was verified. The data come from the IMF's *Government Finance Statistics*. These measures are the most commonly used in the empirical literature on the effects of fiscal decentralization. Although they are highly imperfect and do not reflect information on the distribution of decision-making authority between the levels of government, they provide a useful proxy for the relative level of countries' fiscal decentralization.[13]

All measures of political centralization (described in the previous section) were taken from the *Database on Political Institutions* (Beck et al., 2001). To check robustness of results we use the fractionalization of parliament (the probability that any two members of parliament picked at random belong to different parties) as an alternative measure of party strength.

As measures of the quality of government we use an index of corruption by Transparency International and the World Bank indices of control over corruption, quality of governance, regulatory quality, and rule of law (Kaufmann et al., 2002). To measure the quality of public goods provision we use data on the DPT immunization,

[13] An important shortcoming of these data is that they do not distinguish between state and municipal expenditures and revenues; this breakdown is available only for a very limited number of countries. The share of subnational expenditures is a better measure of fiscal decentralization "on average," while the subnational revenue share is a better measure of "marginal" fiscal decentralization because in many countries marginal retention rates do not change and are equal to the average share of revenues.

infant mortality, illiteracy rate, and pupil-to-teacher ratio level from *World Development Indicators* by the World Bank.[14] To measure economic growth, changes in GDP per capita PPP are used.

4. Methodology

We use standard methodology for growth regressions and regressions of the quality of government (Barro and Sala-i-Martin, 1995; Barro, 1997; Sala-i-Martin, 1997; La Porta et al., 1999; and Treisman, 2000) and add explanatory variables that describe the level of fiscal decentralization, political institutions and - in our focus - their interaction term.

Influence of political institutions on the results of fiscal decentralization, as well as the quality of our data, may differ for developing and transition countries, on the one hand, and developed countries, on the other hand. Therefore, we split the sample into two subsamples: developed countries (the members of the Development Assistance Committee of OECD and Iceland) and developing and transition countries (all other countries). Regression analysis is done separately for the two subsamples.[15]

To analyze the influence of political institutions on the effect of fiscal decentralization on indices of corruption and governance quality we use the following cross-section regression model:

$$Y_i = \alpha_1 + \alpha_2 Polit_i + \alpha_3 Decentr_i + \alpha_4 Polit_i * Decentr_i + \alpha_5 Control_i + \varepsilon_i \quad (1)$$

[14] Unlike the other measures of public goods, pupil-to-teacher ratio is not an outcome, but a characteristic of the process that might reflect inefficiencies of resource use rather than quality. For many developing countries, however, number of teachers reflects a binding constraint. We considered and rejected enrollment in schools as another possible measure of the quality of education. It has a nonlinear relationship to the level of education in the country: for countries with high quality of education, it takes values around 100%, while for countries with lower level of education it takes values either lower or higher than 100%. The values are above 100% when adults go to school.

[15] Pooling the two subsamples together and allowing only the coefficients of interest to differ between the subsamples is rejected by econometric tests.

where Y_i is an index of corruption and governance quality for country i in year 2001.[16] $Polit_i$ and $Decentr_i$ denote the variables that describe political institutions and fiscal decentralization in country i respectively (average for the period 1995-2000). $Control_i$ is the set of control variables that includes logarithm of GDP per capita PPP in 1995, logarithm of population in 1995, share of Protestants, ethnolinguistic fractionalization, latitude, legal origin, democratic traditions by the year 1995, and current level of democracy (average for the period 1995-2000). In these regressions, observations are weighted by the inverse of the standard errors of indices of corruption and governance quality, which are provided along with the indices.

To analyze the influence of political institutions on the effect of fiscal decentralization on economic growth and outcomes of public goods provision we take two approaches: 1) we study cross-country differences in economic growth and public goods with cross-section regressions and 2) short-run changes in public goods within countries with panel-data regressions.[17]

In cross-section specifications, we use the same regression model (1) in which Y_i stands for the logarithm of change in GDP per capita PPP between 2000 and 1975 or average measure of public goods for years 1975-2000 in country i; $Polit_i$ and $Decentr_i$ denote the same variables as in (1) but averaged for the period 1975-2000; and $Control_i$ is the set of control variables. Regressions with measures of public goods as dependent variables include the same control variables as in the regressions for indices of

[16] Quality of government data are available for one year only with the exception of TI corruption index that exists for several years. We use TI corruption index for the year 2001 in our benchmark regressions and the index for the year 2000 to check robustness of our results.

[17] We were unable to use panel regressions for the analysis of economic growth due to the insufficient number of observations in five-year averaged regressions.

governance quality where averages taken for the period 1975-2000 and initial values taken in 1975 or the year closest to it. In the regression for economic growth we add the level of fixed investments, openness of economy (measured as a share of exports and imports in GDP filtered for size of country and population), and logarithm of fertility as control variables. All of these control variables were also measured in 1975 or the year closest to it.[18] In this set of cross-country regressions the weighting was done by the square root of the number of non-missing observations in the interaction term.

For the subsample of the developing and transition countries in addition to OLS specification (1), we estimate 2SLS specification that uses the geographical area of countries as an instrument for fiscal decentralization. We were not able to use the same instrument for the subsample of developed countries because of insufficiently strong correlation between the instrument and fiscal decentralization (see discussion in the section 5.2).

The subsample of developing countries is rather small. To allow for a sufficient number of degrees of freedom, as a baseline we report results from cross-section regressions for developed countries that exclude several most insignificant control variables. As discussed in section 5.1, the results are robust to the choice of control variables.

We also use panel regressions with fixed effects to estimate short-run changes in public goods provision:

$$Y_{it} = \alpha_i + \beta_1 Polit_{it} + \beta_2 Decentr_{it} + \beta_3 Polit_{it} Decentr_{it} + \beta_4 Control_{it} + \rho_t d_t + \varepsilon_{it} \qquad (2)$$

[18] We did not include measures of human development or corruption as control variables in these regressions because, otherwise, possible channels of influence of fiscal decentralization on economic growth would be blocked.

where Y_{it} is a measure of an outcome of public goods provision in country i and year t. $Polit_{it}$ and $Decentr_{it}$ denote variables that describe political institutions and fiscal decentralization in country i and year t; d_t is a year dummy; α_i is a country-specific fixed effect. $Control_{it}$ is the set of control variables that includes PPP GDP per capita for the previous year, logarithm of fertility, and current level of democracy. To eliminate possible endogeneity we instrument democratic traditions, current level of democracy, political institutions, fiscal decentralization, and their interaction term with lagged values.

In all regressions for developing and transition countries we exclude observations for socialist countries before the beginning of transition because economic institutions in these countries (i.e., central planning systems) seem to have different nature.

5. Results

Figures 1 and 2 illustrate our empirical results. The figures present plots of the residual values from regressions of dependent variables on control variables either as a function of interaction term of decentralization and party strength (Figure 1) or as a function of decentralization separately for elected and appointed executives (Figure 2).

Age of main parties

Table 1 presents results for the age of main parties. In the subsample of developing and transition countries it improves the effect of decentralization on all indices of government quality except for Transparency International index of corruption. A 10% increase in decentralization at a level of party age lower than the mean by one half of its standard deviation leads to a decrease in government quality indices of approximately one half of their standard deviations, while at a level of age of parties higher than the mean by the same amount the effect of decentralization is close to zero.

At the mean age of parties, a 10% increase in decentralization leads to a decrease in indices by quarter of their standard deviations. A threshold level of party age above which decentralization has a positive effect on indices of government quality is such that about 80% of the developing countries have parties younger than this level. Party age also improves the effect of decentralization on immunization, infant mortality, and economic growth in the cross-section regressions.[19] From 70% to 90% of the developing countries have party age above a threshold that makes decentralization beneficial for public goods provision and economic growth. Results of the panel regressions indicate that in developing countries the age of parties improves the short run effect of decentralization on immunization and pupil-to-teacher ratio also.

In the subsample of developed countries, the age of main parties has the opposite effect to the one in developing countries.[20] Older parties significantly hamper the effect of decentralization on all government quality indices (except for the regulatory quality which is insignificant).[21] To this date 90% of the developed countries have party age sufficiently young for revenue decentralization not to have a negative effect on the quality of government.

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[19] A 10% increase in decentralization at the age of main parties lower than the mean by one half of its standard deviation leads to a decrease in immunization of 11 percentage points, an increase in infant mortality of 0.6 percentage points, and a decrease in 25 years' economic growth of more than 30%. The same size increase in decentralization at age of main parties higher than the mean by one half of its standard deviation leads to a decrease in immunization of five percentage points, a decrease in infant mortality of 0.2 percentage points, and a decrease in economic growth of 2%. At the mean age of parties, a 10% increase in decentralization decreases immunization by eight percentage points, increases infant mortality by 0.2 percentage points, and decreases long-term growth by 17%. Additional ten years of age of the main parties at the mean level of decentralization lead to an increase in economic growth of 3% and immunization of one percentage point and a decrease in infant mortality of 0.2 percentage points.

[20] We suggest an explanation for the difference in the effects of party age in developed and developing countries in the section 6 below.

[21] At a level of age of parties lower than the mean by one half of its standard deviation, a 10% increase in decentralization leads to an increase in the government quality indices of almost one half of their standard deviations. In contrast, at age of parties higher than the mean by one half of its standard deviation, a 10% increase in decentralization leads to a less than 20% of SDs increase in the indices on average. At the mean level of party age, a 10% increase in decentralization leads to a 30% of SDs increase in the indices.

In addition, cross-country regressions for developed countries show that party age hampers the effect of decentralization on infant mortality and economic growth.[22] A threshold level of party age above which decentralization has a negative effect on public goods and growth is such that more than 80% of the developed countries fall below the threshold. The only significant result in panel regressions for developed countries is that party age hampers the effect of revenue decentralization on immunization level.

Fractionalization of government parties

Table 2 presents results for the fractionalization of government parties. In the subsample of developing and transitional countries, fractionalization of government parties significantly hampers the effect of decentralization on all indices of government quality (except for Transparency International index of corruption which is insignificant).[23] Almost sixty percent of the developing countries in our sample have higher fractionalization than needed for decentralization to have a positive effect on the quality of government.

Fractionalization also hampers the effect of decentralization on provision of all public goods considered and economic growth.[24] Almost half of the developing countries

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[22] A 10% increase in decentralization at age of parties lower than the mean by one half of its standard deviation decreases infant mortality by 0.1 percentage points and increases economic growth by 4%. At age of parties higher than the mean by the same amount, it decreases infant mortality by 0.05 of a percentage point and increases economic growth by less than 1%.

[23] A 10% increase in decentralization, at a level of fractionalization lower than the mean by one half of its standard deviation, leads to an increase in government effectiveness of one third of its standard deviation and almost no change in other indices of government quality. In contrast, at a level of fractionalization higher than the mean by one half of its standard deviation, a 10% increase in decentralization leads to no change in government effectiveness and a decrease in other indices of approximately one third of their standard deviations. At the mean level of fractionalization, a 10% increase in decentralization increases the index of government effectiveness and decreases other indices of government quality by approximately 15% of their standard deviations.

[24] A 10% increase in decentralization at a level of fractionalization lower than the mean by one half of its standard deviation leads to a 40% increase in 25 years' economic growth, an increase in the level of immunization of one percentage point, a decrease in infant mortality of 0.6 percentage points, no change in illiteracy level, and a 10% decrease in pupil to teacher ratio. In contrast, at a level of fractionalization

have fractionalization above a threshold which makes the effect of decentralization on immunization, infant mortality, and illiteracy negative, while for the pupil to teacher ratio and economic growth this share is only 10%. Panel regressions for developing countries do not contain any significant results.

Cross-section results for developed countries are unrobust to the choice of control variables and are subject to alternative explanations (see section 5.1 below). Panel results for developed countries indicate that increased fractionalization hampers the short run effect of decentralization on infant mortality and pupil to teacher ratio.

State executives appointed/elected

Table 3 presents results for the effect of elections of state executives. The effect of decentralization on the indices of government effectiveness, regulatory quality, and rule of law in developing and transition countries is negative and insignificant in the case of elected state executives and positive insignificant in the case of appointed executives with a significant difference between them. About 40% of the developing countries have decentralization below a threshold which makes the quality of government higher in the case of elected state executives.[25]

Cross-country regressions show that the effect of decentralization on infant mortality, illiteracy, and economic growth is negative and insignificant in the case of

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higher than the mean by one half of its standard deviation, it leads to a 20% increase in economic growth, a decrease in the level of immunization of three percentage points, a decrease in infant mortality of 0.1 percentage points, a decrease in illiteracy of two percentage points, and a 5% decrease in pupil to teacher ratio. At the mean level of fractionalization, an increase in decentralization by 10% decreases immunization and increases illiteracy by two and one percentage points, respectively, but also decreases infant mortality by 0.3 percentage points and pupil to teacher ratio by 9%, while economic growth increases by 30%.

[25] A 10% increase in decentralization in the case of elected state executives decreases these indices by approximately one half of their standard deviations. A comparison of the quality of government for elected and appointed state executives at the mean value of decentralization shows that in the case of elected executives the indices are lower by more than one half of their standard deviations.

elected state executives and positive insignificant in the case of appointed executives with a significant difference between them. More than one half of the developing countries have decentralization below a threshold which makes the public goods provision and economic growth higher in the case of elected state executives.[26] As discussed in the section 5.1 below, all panel results for the administrative subordination measures turn out to be unrobust because of insufficient over-time variation.

In the developed countries, elections of state executives do not significantly affect decentralization outcomes in the quality of government. The effect of decentralization on economic growth and alleviation of infant mortality, in the case of appointed state executives, is significantly positive and, in the case of elected executives, - insignificant and close to zero, with a statistically significant difference in slopes.[27] A threshold level below which infant mortality is better in the case of elected state executives is such that about one half of the developed countries are below the threshold. For growth this proportion is more than 80%.

Municipal executives appointed/elected

Results for subordination of municipal executives are presented in Table 4. The only significant results for the subsample of developing and transition countries are that local elections worsen the effect of decentralization on regulation quality, economic growth and immunization. The effect is positive and insignificant for appointed

[26] A 10% increase in revenue decentralization in the case of elected state executives decreases infant mortality by one percentage point and economic growth by 75%. The effect for expenditure decentralization is twice as low. At the mean level of expenditure decentralization in the case of elected state executives infant mortality is higher by 0.6 percentage points and economic growth is higher by 15%. At the mean level of revenue decentralization in the case of elected state executives infant mortality is higher by 0.1 percentage points and economic growth is lower by 6%.

[27] In the case of appointed state executives, a 10% increase in subnational revenue share leads to a decrease in infant mortality of 0.2 percentage points and 10% increase in growth. Overall, countries with elected state executives have better outcomes due to sufficiently low mean decentralization: infant mortality is 0.7 percentage points lower and growth rate is 13% higher at the mean level of decentralization.

municipal executives and negative and insignificant for the elected local executives with a significant difference in slopes.[28] A threshold level above which immunization and growth is higher in countries with elected (compared to appointed) municipal executives is such that more than one half of the developing countries fall below the threshold. For the regulation quality around 80% of the countries are below the threshold.

The only statistically significant result for developed countries about government quality is for the government effectiveness index. In the case of elected municipal executives, the effect of decentralization on government effectiveness is very small, positive, and insignificant. In the case of appointed executives, it is negative, much larger in absolute value and also insignificant. The difference between slopes of these effects is statistically significant. Government effectiveness is better in countries with elected municipal executives when revenue decentralization is above 26%, leaving more than one half of the developed countries below the threshold level.[29] The cross-section results about public goods provision are the opposite: local elections worsen the decentralization outcomes. The effect of decentralization on immunization, infant mortality, and pupil to teacher ratio in cross-section of developed countries is positive for appointed and elected executives, but the difference in slopes is significant. The threshold level of decentralization above which the outcomes for infant mortality and pupil to teacher ratio are worse in the case of elected municipal executives is such that more than one half of

[28] With elected municipal executives, a 10% increase in decentralization leads to a decrease in regulation quality of 15% of standard deviation, 14% drop in immunization level and a 40% fall in growth. At the mean level of decentralization, regulation quality if higher by 75% of standard deviation, immunization level is 8% lower and economic growth is 15% higher in the cash of elected municipal executives.

[29] The overall effect of municipal elections on the government effectiveness (at the mean of decentralization) is negative: the index is more than one half of its standard deviation lower in the case of elected municipal executives.

the developed countries fall below the threshold. For immunization almost all the developed countries are above the threshold.

The next two sections (5.1 and 5.2) discuss robustness of our results with regard to alternative explanations, influential observations, choice of specifications, measurement error, sample selection, and endogeneity. Readers not interested in methodological technicalities can directly skip to section 6 that discusses the results.

5.1. Sensitivity analysis

To check sensitivity of the results with respect to influential observations in cross-country regressions, we estimated the same model using robust regressions and excluding China - the most influential observation in cross-section regressions. The results of the robust regressions in most cases are the same as of the baseline regressions. Several results become insignificant while preserving the sign of coefficients. Few results - insignificant in the baseline setting - become significant. All of these results are in line with the pattern of the baseline estimation. The effect of excluding China is similar.

The results of panel regressions were also tested for presence of influential observations. By and large, in regressions for the measures of party strength exclusion of any single country does not lead to significant changes in the magnitude of estimated coefficients and leaves them inside the initial confidence intervals. In cases when exclusion of one country made coefficients insignificant, the loss of significance can be attributed to reduced number of observations and not to the presence of influential observations.

There is a dichotomy between results for public goods provision in cross-section and panel regressions for the measures of subordination of subnational authorities. It is

particularly striking for elections of state executives: all panel results suggest that elections lead to better outcomes of decentralization; cross-section results state the opposite. As it turns out, panel results for subordination are unrobust, have poor explanatory power, and are subject to reverse causality. First, most of the results about the effect of decentralization on public goods provision in panel regressions (that indicate better effect of decentralization in case of elected executives) change sign after the exclusion of Sweden for developed countries and Iran, Argentina, or Israel for developing countries. Second, between 97 and 99.99 percent of total explained variation in dependent variables is accounted for by country fixed effects, in other words, is essentially left unexplained in the panel regressions for subordination.[30] Yet about 60 to 80 percent of variation in point estimates of country fixed effects is explained by the right hand side variables from cross-country regressions. The contribution of the cross-term of political centralization and fiscal decentralization is in range between 1 and 9 percentage points. Finally, panel results for subordination may be driven by reverse causation as very small (compared to overall variation) short run changes in dependent variable can influence the explanatory variables. This situation can occur if national government provides more financial assistance to the regions that have temporary troubles with public goods provision in the case of appointed local executives and less assistance in the case when they are elected. This story produces negative correlation between the short run changes in fiscal decentralization and public goods in the case of appointed local executives and no significant correlation in the case of elected executives just as panel

[30] In panel regressions for party strength, a much larger portion of explained variation (about 12 percent) is due to changes in explanatory variables rather than fixed effects. The results of cross-section and panel regressions for party strength are consistent.

results suggest. All the pieces of evidence indicate that we should put emphasis on the cross-section results for subordination.[31]

The results proved to be robust to the addition of the following control variables: initial GDP per capita squared, federation dummy (Treisman, 2000), regional dummies (Central and Eastern Europe, former Soviet Union, Asia, Africa, Middle East, Latin America), colonial dummies (British, Spanish, French, and other colonies), average size of jurisdictions in cross-section regressions, logarithm of population in panel regressions and interaction term of population and measures of fiscal decentralization in both cross-country and panel regressions. In addition, results are robust to replacing the across-time average level of democracy by its initial level in cross-country regressions. After exclusion of countries with authoritarian regimes from the sample some results lost significance while most remain significant and consistent with the baseline results.

To check whether the strength of the party system provides political incentives even in case of appointed executives, we ran the same regressions for the subsample of developing and transition countries with appointed state executives (other possible subsamples did not contain sufficient number of observations). Cross-section results in regressions without instruments for government effectiveness, control over corruption, rule of law, immunization, and infant mortality remain significant. All other results become insignificant, while preserving the sign. In the regressions with instruments all

[31] If, despite of all said above, one takes panel results seriously, the difference between the panel and cross-section results can arise because of a bias in cross-section estimation as a result of unobserved heterogeneity. If this is the case, the true results are produced by the panel regressions. It is, however, hard to believe that local elections provide weaker political incentives in developed countries compared to developing: panel results suggest that decentralization brings inferior outcomes of immunization and infant mortality when subnational officials are elected in the developed countries and superior outcomes in developing countries.

the results become insignificant. But since the bias in uninstrumented regressions attenuates coefficients towards zero (see section 5.2), the loss of significance can be attributed to insufficient number of observations.

In the beginning of transition, many post-communist countries experienced "initial" output fall, deterioration in quality of public goods, and economic decentralization (Roland, 2000). Since we cannot account for the nature of these processes, we verified that the exclusion of observations for the transition countries before 1995 does not affect the results.

To make sure that results of panel regressions do not just reflect global trends in decentralization and its effectiveness for instance, due to better information and monitoring technologies (De Figueiredo and Weingast, 2002), in addition to year dummies, we included interaction term of year dummies and decentralization to control for these trends and got the same results as in the baseline regressions.

The age of parties may reflect the country age or the age of democracy. In this case institution-building processes that may affect decentralization outcomes could drive our results based on party age. In order to rule this story out, we included direct measures of the country age since independence and the age of democracy together with their interaction terms with fiscal decentralization for all regressions with the party age in the subsample of developing countries.[32] The results proved to be robust.

A potential drawback of fractionalization of government parties as a measure of party strength is that it may reflect the effects of other political institutions that affect

[32] As a proxy for the age of democracy we take the number of years since the democratic regime has been established for the last time as reported in *Polity IV* data base. The age of democracy takes zero value if the current or any future value of *Polity IV* measure of democracy is zero. This measure of the age of democracy is only weakly correlated with the age of main parties.

both the fractionalization and the results of decentralization. Literature on comparative politics stresses the systematic differences between party structures – fractionalization, in particular – in presidential and parliamentary systems (Shugart and Carey, 1992) and majoritarian and proportional electoral rules (see Duverger, 1972 and Myerson, 1999); these differences likely but not necessarily reflect party strength (Duverger, 1972). Moreover, electoral rules and government systems may directly affect corruption (Myerson, 1999; Persson, Tabellini, and Trebbi, 2003) and public goods provision (Persson and Tabellini, 1999; Persson, Roland, and Tabellini, 2000). To make sure that fractionalization of governing parties measures the party strength rather than the effect of these other institutions we tried each of the following three options. First, we included dummies for electoral rule and government system as well as their interaction term with the measures of fiscal decentralization in the set of control variables. Second, we used the residuals from the regression of government parties' fractionalization on these dummy variables as an alternative measure of party strength. Third, for developing countries we had sufficient number of observations to re-estimate regressions on the subsample of countries with proportional representation. Each approach produced results very similar to the baseline.

Another potential drawback of fractionalization of government parties as a measure of party strength is that high fractionalization may reflect high geographical segregation of voters with different political preferences. In this case fractionalization of government parties may capture the existence of secessionist tendencies that can lead to inefficient fiscal decentralization aimed at appeasing secessionist tendencies. To rule this explanation out we, first, control for a dummy variable that tells whether a country has

autonomous or self-governing regions and its interaction term with measures of fiscal decentralization. Our results proved to be robust to inclusion of these controls.[33] Second, we construct a measure of heterogeneity of voting patterns on national elections across regions and control for it along with its interaction with fiscal decentralization.[34] The results for developing countries again proved to be robust; while the results for the subsample of developed countries turn out to be unrobust. After controlling for voting heterogeneity, in developed countries, government fractionalization impairs the effect of decentralization on public goods provision, but improves its effect on government quality.

The number of developed countries is small. Thus, the number of degrees of freedom in cross-country regressions for developed countries may be insufficient if we include the full set of controls used in the regressions for the subsample of developing countries. We use the following two alternative strategies to check robustness of the results for developed countries with respect to the choice of control variables: 1) one-by-one exclusion of the least statistically significant control variables (with t-statistics less than unity) from regressions with the full set of controls and 2) one-by-one inclusion of the most economically and statistically significant control variables to the regressions starting with no controls. Regardless of the strategy, we get the same results as in

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[33] The data on autonomous regions come from the *Database on Political Institutions*, Version 3 (Beck et al., 2001).

[34] The data on regional voting patterns on national elections come from counties' official electoral committees. The measure of heterogeneity of voting patterns is constructed for each country as $h = \sum_{i=1}^{n}\sum_{j=1}^{m} \frac{\left(v_{ij} - \frac{\sum_{k}^{n} v_{kj}}{n}\right)^2}{nm}$, where v_{ij} is the percentage of votes for party *j* in region *i*, n is the number of regions, m is the number of parties in a particular country.

regressions with the full set of controls with the only difference that exclusion of insignificant control variables in some cases makes the results more significant.[35]

Overall, sensitivity analysis suggests that our results are generally stable with the exception of cross-section results based on government fractionalization measure in developed countries and panel results for administrative subordination.

5.2. Endogeneity issues

The most important source of endogeneity is that the quality of government, economic growth and public goods provision may affect popularity of existing parties and the strength of country's party system. Unfortunately, we do not have valid instruments for political institutions in cross-section regressions. To account for possible endogeneity we used the initial levels of the age of main parties and government fractionalization instead of across-time averages in the cross-section analysis. The results using initial values of political institutions are very similar to those in the baseline regressions (few results lost significance, however). Still, the initial levels are not a very good instrument; and possible endogeneity of the strength of political parties is the main concern for our cross-section results.

Since fiscal decentralization may also be endogenous (Strumpf and Oberholzer-Gee, 2002 and Fisman and Gatti, 2002), in cross-country regressions we use geographical area of countries and its interaction term with measures of political centralization as instruments for fiscal decentralization and the interaction of decentralization and political

[35] All the results (from the estimation with the full set of controls) preserve their sign and most remain significant with no control variables included into regressions (except for growth regressions where the initial GDP per capita is an important control). All the results become significant after adding two most significant control variables.

institutions.[36] The intuition behind this instrument is that, ceteris paribus, costs of centralized governance increase with geographical size of the country which leads to higher economic decentralization in countries with larger area. In the subsample of developing and transition countries geographical area is strongly correlated with fiscal decentralization. In the subsample of developed countries, however, the correlation is weaker. As shown in Table A5 in appendix (which reports F-statistics from all the first stage regressions), residual correlation of our instrument with decentralization in OECD countries is prohibitively weak in regressions for measures of party strength. Thus, we report uninstrumented results for the subsample of developed countries. For geographical area to be a valid instrument, it should be uncorrelated with the independent variables other than through its effect on fiscal decentralization. Yet, in the long run, geographical area can be endogenous (Alesina and Spolaore, 1997; Alesina 2003). We assume that 25 years is sufficiently short horizon to treat the area of countries as exogenous.[37] Comparison of the results with and without instruments for decentralization shows that the signs of coefficients are the same and the magnitudes increase considerably (by one and a half - two times on average). Some of the results that are insignificant in regressions without instruments become significant with instrumentation. The Hausman

[36] Other studies (Fisman and Gatti, 2002; de Mello and Barenstein, 2001) used country legal origin as an instrument. It is not an appropriate choice of instrument in our case because legal origin can affect our dependent variables not through fiscal decentralization but through other channels (La Porta et al., 1999). Our results support this notion because legal origin is significant in regressions that include measures of fiscal decentralization.

[37] This assumption is supported by the fact that geographical area is insignificant if added in regressions that include fiscal decentralization. We should note, however, that almost all the countries in our sample for which the area changed since 1975 emerged after the brake up of the former socialist states (Soviet Union, Yugoslavia, and Czechoslovakia). Although their resultant size was historically predetermined, there is a possibility that the brake up and performance of these countries during transition are related in a way that introduces correlation between the geographical area and our dependent variables.

test, however, does not reject the hypothesis that both specifications are consistent.[38] In the regressions for the subsample of developed countries that use subordination as a measure of political centralization, the results of regressions with and without instruments are almost identical.[39] Therefore, we conclude that 1) in developing countries there may be a bias that attenuates coefficients towards zero, probably, as a result of a measurement error and 2) results for developed countries are unbiased.

Lags are used as instruments in panel regressions for fiscal decentralization, political centralization, their interaction term, and democracy. For the most part, instrumentation increases the magnitude of coefficients while preserving their signs. This is also consistent with the measurement error explanation of the bias. The only exception is regressions with government fractionalization as a measure of party strength. Use of instruments in these regressions leads to a negative shift in point estimates of coefficients (we observe occasional alteration of the sign when coefficients are positive in uninstrumented regressions). A possible explanation of this bias is as follows. An increase in economic performance can have different effect on fractionalization of governing parties in economically centralized and decentralized states. In countries with low level of decentralization, better performance leads to relative strengthening of the national governing parties because the success is attributed to national policies. In highly decentralized countries, voters attribute economic success to regional policies that may lead to a relative increase in fractionalization of national government parties due to strengthening of local political organizations. Then, uninstrumented regressions should

[38] The only exception is the regression of GDP growth with share of subnational revenues and party age, for which the null hypothesis is rejected.
[39] F-statistics are high enough for us to be able to compare the regressions for subnational revenues.

produce an upward bias in the coefficient of the interaction term between government fractionalization and fiscal decentralization. This is consistent with our findings.

6. Summary and discussion of empirical results

First we discuss the results about strength of political parties.[40] We find very strong evidence that in developing countries low age of main parties and high fractionalization of government parties worsen the effect of fiscal decentralization on economic growth, government quality, and public goods.[41] This evidence is a solid support for Riker's theory that strong political parties increase political accountability of subnational governments improving the results of decentralization. In contrast, in developed countries party age has a negative effect on decentralization results, while effect of government fractionalization is unrobust. The difference in results for party age in two subsamples highlights the importance of the level of civic development and democratic tradition for functioning of political institutions.[42] Generally speaking, political centralization has two effects on political incentives: a beneficial effect of strengthening career concerns and a possible adverse effect of decreased political competition. In the two groups of countries the age of main parties captures different aspects of political centralization. Developed countries are characterized by presence of a priori strong political incentives compared to developing countries. At this level of development, an increase in party age primarily reflects a relative decrease in political competition because it is a sign of insufficient political turnover. In this case, career

[40] Table A6 in appendix summarizes all results: it presents signs and significance of coefficients at cross-terms of fiscal decentralization and political institutions.

[41] The fact that political institutions affect results of decentralization in the same way for all the outcomes is remarkable because in many contexts there exist a tradeoff between growth and government quality, on the one hand, and public goods provision, on the other hand (Besley and Coate, 2003; Roland 2000).

[42] Note that this difference can not be explained by presence of nonlinear effect because the ranges of values of the party age variable in developed and developing countries significantly overlap.

concerns effect is also present, but is dominated.[43] Under the conditions of low level of civic capital and absence of long democratic tradition, party strength turns out to have a much smaller effect on political competition compared to developed countries because even very weak parties can eliminate political competition by capturing electoral institutions and media. Russia in the 1990s provides a good example of how local and regional-level politicians can manage to eliminate political competition altogether with the help of control over local media and courts. We test validity of this explanation for the difference in party age results in developed and developing countries by re-estimating party age regressions separately for subsamples of developing countries with high and low level of media independence. The results of the text are consistent with our explanation.[44] Thus, an increase in party age in developed countries has an adverse effect on political incentives because the marginal cost of a decrease in political competition overweighs the marginal benefit of an increase in career concerns. In contrast, in developing countries political competition plays little role in disciplining politicians and career concerns become the source of local political incentives. Overall, Riker's theory is confirmed by the evidence from developing countries.

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[43] In general, government fractionalization captures both career concerns and political competition effects because it reflects political weight of an average governing party. Note that fractionalization may reflect both an increase and a decrease in political competition. The latter could happen when the largest governing party retains the same-size fraction in parliament and the other parties get more fractionalized.

[44] In the subsample of developing countries with freedom of press below the median (measured by the Freedom House index, www.freedomhouse.com), we find some evidence in line with the overall results for developing countries: higher party age improves the effect of decentralization for TI index of corruption and immunization level. In contrast, the evidence from the subsample of developing countries with press freedom above the median resembles the results for developed countries: party age worsens the effect of decentralization on TI corruption index, regulatory quality, and pupil to teacher ratio. The results of this test at best should be viewed as weak tentative evidence in favor of our explanation because the number of degrees of freedom in these regressions is very small. Press freedom index included directly or as interaction in the regressions is insignificant, which may be explained by the unreliable cardinal properties of the index.

Let us turn to the discussion of results about the effect of subnational elections. The cross-section results for developing countries sharply contrast with the view that local elections provide sufficient political accountability. Elections of state executive officials worsen the effect of decentralization on quality of government, public goods provision, and economic growth in developing countries. Municipal elections also significantly hurt decentralization results for economic growth and provision of some public goods. The net effect of elections, however, is positive for almost one half of the developing countries that have sufficiently low decentralization.[45] Subnational elections do not result in better decentralization outcomes in developing countries because of localism, relatively high capture, and provincial protectionism (Bardhan, 2002).

The results for developed countries are mixed. There is evidence of a negative effect of subnational elections on the decentralization outcomes for growth, immunization, and infant mortality. Yet, there is a small positive effect of decentralization on quality of governance: municipal elections significantly improve the results of revenue decentralization for government effectiveness (in all other regressions, cross-terms of government quality indices with municipal elections have positive insignificant coefficients). Overall, we find that elections have a better effect on accountability in developed compared to developing and transition countries.[46]

[45] Local elections have independent of decentralization effect on governance. First, they help the government to gather and aggregate information about people's preferences. Second, they have an important influence on development of civil society.

[46] Besley and Coate (2003) compare performance of elected to appointed regulators in the US electricity sector and find that elected regulators ensure lower consumer prices but not necessarily better quality of service.

7. Conclusions

Our key finding is that political institutions - in particular, political centralization - play an important role in determining the results of fiscal decentralization. In line with the theory of Riker (1964) we find that strong national party system is a very effective way of securing political accountability needed for efficient decentralization in developing countries. There is no straightforward relationship between party strength and results of decentralization in developed countries; political centralization has two effects that work in opposite directions: weakening of political competition and strengthening of career concerns.

Constitutional and administrative arrangements that make local executives directly subordinate to the higher-level authorities also were found to improve political incentives in decentralization (Blanchard and Shleifer, 2000). This, however, does not mean that a policy prescription for a large inherently decentralized country should be to get rid of subnational elections. First, local elections have a substantial (independent of decentralization) positive effect on many economic outcomes. Second, they are a necessary prerequisite to developing democratic tradition, civil society, and other components of civic capital accumulation. Third, politicians at all levels of government may be subject to capture, and therefore, administrative control of local by central officials does not necessarily align interest of local bureaucrats with the public (Bardhan and Mookherjee, 1999).

Thus, a better remedy to poor governance in inherently decentralized countries is building strong national political parties. Strong parties help to provide elected local officials with efficient political incentives because their chances of reelection depend

both on the national party support (i.e., national objectives) and the satisfaction of local constituency (i.e., local accountability).

Fiscal decentralization and political institutions affect one another and are influenced by many other factors. Accounting for the determinants of fiscal decentralization and political institutions is the task for future research.

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Table 1. Party age

	Panel A. Subsample of developing and transition countries											Panel B. Subsample of developed countries									
	Quality of Government (Cross-section)±				Public Goods and Growth (Cross-section)±				Public Goods (Panel)±			Quality of Government (Cross-section)					Public Goods and Growth (Cross-section)±			Public Goods (Panel)±	
	Government Effectiveness Index	Regulation Quality index	Control over Corruption Index	Rule of Law index	Immunization	Negative of Infant Mortality	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Infant Mortality	Negative of Logarithm (Pupil to Teacher Ratio)	Transparency International index for 2001	Government Effectiveness Index	Regulation Quality index	Control over Corruption Index	Rule of Law index	Immunization	Negative of Infant Mortality	GDP growth	Immunization	Negative of Infant Mortality
Subnational revenue share	-0.025	-0.058	-0.057	-0.070	-1.429	-0.919	-0.010	-0.049	-1.294	0.053	-0.012	0.091	0.036	0.029	0.041	0.024	0.116	0.265	0.010	1.092	0.130
	[1.22]	[1.54]	[1.74]*	[2.29]**	[1.26]	[1.10]	[0.55]	[1.06]	[2.10]**	[0.20]	[1.79]*	[2.97]**	[2.51]**	[2.16]*	[2.74]**	[3.03]**	[0.20]	[3.18]***	[1.65]	[1.07]	[2.33]**
CROSSTERM: Subnational revenue share &																					
Age of the main parties	0.892	1.658	1.670	1.880	28.256	31.737	0.370	1.356	50.463	-4.860	0.457	-0.882	-0.251	-0.195	-0.350	-0.185	-0.411	-2.571	-0.119	-22.576	-0.739
	[1.89]*	[1.81]*	[2.18]**	[2.54]**	[1.87]*	[2.78]***	[1.67]	[3.61]***	[3.01]***	[0.92]	[2.71]***	[3.70]***	[2.04]*	[1.70]	[3.13]**	[2.38]**	[0.09]	[3.61]***	[2.25]**	[2.48]**	[1.29]
Age of the main parties	-5.118	-28.914	-30.460	-31.498	-339.95	-314.04	-4.69	-16.74	-647.00	-137.60	-8.48	44.157	14.090	12.648	19.262	9.151	-73.79	43.72	6.97	891.09	21.09
	[0.38]	[1.31]	[1.67]	[1.69]	[1.34]	[1.73]*	[1.34]	[2.69]***	[1.85]*	[1.50]	[2.84]***	[3.88]***	[2.56]**	[2.51]**	[3.54]***	[2.14]*	[0.43]	[1.41]	[3.31]***	[3.17]***	[1.12]
Logarithm (GDP per capita)	0.479	0.201	0.415	0.338	1.934	22.726	0.169	-0.530	28.116	9.370	0.255	-5.507	-1.147	-1.800	-2.548	-0.558	-3.513	-0.305	-0.901	28.986	3.204
	[4.33]***	[1.45]	[2.93]***	[2.63]**	[0.55]	[7.63]***	[3.77]***	[3.67]***	[3.42]***	[2.45]**	[3.36]***	[2.76]**	[1.08]	[1.53]	[2.52]**	[0.89]	[0.52]	[0.24]	[11.76]***	[1.62]	[3.13]***
Democratic traditions	0.055	0.011	0.138	0.097	1.504	3.737	0.014	0.050				0.584	0.111	0.156	0.208	0.100					
	[2.29]**	[0.27]	[4.43]***	[2.76]**	[1.12]	[2.17]**	[0.57]	[0.99]				[2.89]**	[1.01]	[1.23]	[2.00]*	[1.52]					
Current level of democracy	0.039	0.063	0.024	0.062	-0.138	-0.203	0.018	0.035	-1.160	-0.402	-0.008						-6.021	-1.823	-0.250	-5.681	-0.436
	[1.91]*	[1.64]	[1.02]	[2.52]**	[0.14]	[0.16]	[0.88]	[0.98]	[1.64]	[0.88]	[1.44]						[1.05]	[1.28]	[2.53]**	[0.69]	[0.80]
Logarithm (Fertility)								-0.653	-83.564	-28.455	-0.204									-9.408	-3.536
								[1.63]	[5.23]***	[3.59]***	[1.34]									[1.01]	[5.39]***
Logarithm (Population)	-0.008	-0.009	0.004	0.046	0.078	-0.050	-0.011	0.142				-0.378	-0.078	-0.085	-0.132	-0.093	-0.351	0.070	0.031		
	[0.12]	[0.10]	[0.05]	[0.56]	[0.02]	[0.01]	[0.21]	[0.80]				[4.18]***	[1.81]	[2.01]*	[3.40]***	[3.55]***	[0.19]	[0.37]	[0.90]		
Share of protestant	0.006	0.009	0.001	-0.009	-0.257	-0.254	-0.006	-0.006				0.024	-0.003	-0.001	0.009	0.000	0.233	0.029	0.000		
	[0.76]	[0.70]	[0.13]	[0.81]	[1.30]	[1.36]	[1.94]*	[0.88]				[4.01]***	[0.79]	[0.40]	[2.37]**	[0.07]	[1.80]*	[2.05]*	[0.22]		
Ethnolinguistic	0.386	0.282	0.733	1.359	2.842	-12.362	0.223	0.013									46.156	5.118	-0.285		
fractionalization	[0.61]	[0.25]	[0.94]	[1.45]	[0.16]	[0.81]	[0.70]	[0.02]									[2.07]*	[1.97]*	[1.56]		
Latitude	0.337	0.761	1.900	2.760	68.007	4.866	0.774	3.364				-4.740	0.501	-0.449	-1.369	-0.233	3.461	10.557	-0.353		
	[0.23]	[0.29]	[0.84]	[1.34]	[1.02]	[0.12]	[0.83]	[1.24]				[2.16]*	[0.70]	[0.66]	[1.39]	[0.47]	[0.12]	[3.03]**	[1.14]		
English legal origin	.	.	.	.	-4.626	-48.053	0.174	-0.746									-15.993	0.801	-0.074		
	[.]	[.]	[.]	[.]	[0.42]	[5.44]***	[1.37]	[2.93]***									[1.02]	[0.58]	[0.71]		
Socialist Legal origin	0.176	-0.419	0.231	0.092	8.694	-19.111	0.375	-2.119													
	[0.46]	[0.89]	[0.42]	[0.22]	[1.02]	[2.40]**	[3.18]***	[6.47]***													
French legal origin	0.037	0.327	0.386	0.297	-0.003	-34.646	0.134	-0.337				1.83	0.44	0.49	0.85	0.13	-3.657	1.112	-0.043		
	[0.17]	[1.00]	[1.37]	[0.88]	[0.00]	[3.13]***	[0.72]	[0.66]				[2.23]**	[0.83]	[0.84]	[1.76]	[0.41]	[0.18]	[0.60]	[0.31]		
Fixed investments								-0.001													
								[0.09]													
Openness								0.005											0.007		
								[1.19]											[7.43]***		
Annual dummies									Y	Y	Y									Y	Y
Observations	39	39	39	39	70	70	70	70	329	219	241	20	20	20	20	20	22	22	22	207	366
Number of countries									48	51	45									21	22
R-squared												0.86	0.63	0.48	0.82	0.83	0.71	0.83	0.96		

*Note: Absolute values of robust t-statistics are in parentheses in cross-section regressions, z-statistics - in parentheses in panel regressions. *** - significant at 1% level;** - significant at 5% level;* - significant at 10% level. In cross-country re robust t-statistics are countries, the number of control variables is decreased to provide additional degrees of freedom. Regressions with the full set of control variables provide consisten results (see section 5.1).*

± In developing countries, there are no significant results for Transparency International index of corruption and illiteracy; In developed countries, there are no significant results in regressions of pupil-to-teacher ratio and illiteracy.

Table 2. Fractionalization of government parties

	Panel A. Cross-country regressions, subsample of developing and transition countries										Panel B. Subsample of developed countries						
	Government Quality					Public Goods and Growth±					Public Goods and Growth (Cross section)±				Public Goods (Panel)		
	Transparency International index for 2001	Government Effectiveness Index	Regulation Quality index	Control over Corruption Index	Rule of Law index	Immunization	Negative of Infant Mortality	Negative of Illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Infant Mortality	Negative of Logarithm (Pupil to Teacher Ratio)
Subnational revenue share	0.038	0.029	0.011	0.008	0.012	0.333	0.699	0.127	0.011	0.055	0.042	-0.010	0.010	0.005	-1.037	0.068	-0.003
	[1.37]	[2.51]**	[0.85]	[0.64]	[1.40]	[0.97]	[1.32]	[0.29]	[1.66]	[1.53]	[0.16]	[0.21]	[1.13]	[0.90]	[2.23]**	[2.11]**	[0.15]
CROSSTERM: Subnational revenue share &	-0.092	-0.074	-0.072	-0.074	-0.089	-1.789	-2.068	-0.908	-0.026	-0.086	-1.006	-0.057	-0.031	-0.006	-0.961	0.041	-0.065
Fractionalization of government parties	[1.26]	[3.20]***	[3.03]***	[2.75]**	[5.46]***	[6.94]***	[3.74]***	[2.04]**	[3.26]***	[3.92]***	[2.26]**	[0.58]	[1.66]	[0.54]	[1.41]	[0.70]	[2.71]***
Fractionalization of government parties	2.268	1.283	1.126	1.558	1.493	19.521	46.626	13.271	0.557	1.456	8.077	4.774	0.420	0.367	15.948	-0.508	0.938
	[1.11]	[2.08]**	[1.53]	[2.35]**	[3.06]***	[2.41]**	[3.18]***	[1.11]	[3.43]***	[2.82]***	[0.73]	[1.17]	[0.63]	[0.88]	[1.01]	[0.37]	[1.52]
Logarithm (GDP per capita)	1.197	0.511	0.212	0.369	0.359	2.759	19.598	13.988	0.148	-0.381	-3.583	0.663	-0.181	-0.936	49.022	3.448	-1.063
	[2.69]**	[3.38]***	[1.28]	[2.41]**	[2.85]***	[1.26]	[5.24]***	[4.23]***	[3.25]***	[1.84]*	[0.75]	[0.65]	[0.75]	[8.07]***	[2.89]***	[3.66]***	[2.08]**
Democratic traditions	0.164	0.053	-0.004	0.119	0.074	1.035	4.767	1.714	0.018	0.034							
	[1.86]*	[1.81]*	[0.09]	[2.64]**	[2.70]**	[1.02]	[3.00]***	[1.28]	[0.88]	[0.77]							
Current level of democracy	-0.048	0.034	0.063	0.021	0.066	0.243	-0.869	0.078	0.016	-0.028	-9.386	-1.561	0.119	-0.081	3.079	-0.210	0.002
	[0.76]	[1.11]	[1.47]	[0.82]	[2.44]**	[0.34]	[0.75]	[0.08]	[0.97]	[0.55]	[1.53]	[1.37]	[0.59]	[0.62]	[0.41]	[0.47]	[0.01]
Logarithm (Population)	-0.175	-0.050	-0.036	-0.002	0.012	-1.877	-0.936	1.462	-0.023	-0.064							
	[1.03]	[0.65]	[0.40]	[0.03]	[0.18]	[1.00]	[0.29]	[0.56]	[0.53]	[0.37]							
Share of protestant	0.027	0.011	0.016	0.010	0.001	-0.105	-0.077	0.153	-0.003	0.003	0.219	0.023	0.0015	-0.0001			
	[2.02]*	[1.61]	[1.84]*	[1.77]*	[0.10]	[0.87]	[0.39]	[0.55]	[1.10]	[0.53]	[2.66]**	[2.20]*	[0.48]	[0.06]			
Ethnolinguistic fractionalization	-1.087	0.032	-0.335	-0.069	0.582	-14.40	-36.46	-5.516	-0.101	-1.217	51.468	3.499	0.299	-0.143			
	[0.81]	[0.05]	[0.43]	[0.18]	[1.07]	[2.21]**	[2.97]***	[0.55]	[0.47]	[1.77]*	[2.92]**	[0.99]	[0.51]	[0.46]			
Latitude	-0.020	-1.032	-1.599	0.051	-0.019	15.967	-39.3	-14.3	-0.002	-1.162	-15.177	5.611	-0.908	-0.306			
	[0.01]	[0.94]	[1.14]	[0.04]	[0.02]	[0.86]	[0.97]	[0.68]	[0.00]	[0.57]	[0.93]	[1.08]	[1.78]	[0.68]			
English legal origin	.	-0.432	-0.248	-0.715	-0.812	-1.793	-49.27	-28.44	0.154	-0.514	-32.907	-0.374	-0.827	-0.012			
	[.]	[1.28]	[0.68]	[1.93]*	[3.18]***	[0.26]	[5.16]***	[3.51]***	[1.26]	[1.69]*	[2.95]**	[0.20]	[2.00]*	[0.08]			
Socialist Legal origin	-0.527	.	.	.	.	13.508	-8.864	-3.870	0.482	-2.107							
	[0.51]	[.]	[.]	[.]	[.]	[2.71]***	[1.12]	[0.50]	[4.13]***	[6.28]***							
French legal origin	-0.135	-0.195	0.082	-0.223	-0.485	-3.477	-31.427	-18.783	0.099	-0.676	-18.776	-2.140	-0.562	-0.143			
	[0.14]	[0.47]	[0.22]	[0.53]	[1.66]	[0.65]	[2.78]***	[2.43]**	[0.75]	[1.33]	[1.23]	[0.96]	[1.31]	[0.69]			
Fixed investments										0.011							
										[0.99]							
Openness										-0.003				0.006			
										[0.59]				[2.94]**			
Logarithm (Fertility)										-1.355					-16.275	-3.584	-0.921
										[3.82]***					[1.66]*	[5.58]***	[4.24]***
Annual dummies															Y	Y	Y
Observations	34	39	39	39	39	73	73	67	73	73	22	22	21	22	210	380	165
Number of countries															21	22	20
R-squared											0.78	0.78	0.52	0.91			

*Note: Absolute values of robust t-statistics are in parentheses in cross-section regressions, z-statistics - in parentheses in panel regressions. *** - significant at 1% level;** - significant at 5% level;* - significant at 10% level. In cross-country regressions for developed countries, the number of control variables is decreased to provide additional degrees of freedom. Regressions with the full set of control variables provide consisten results (section 5.1).*
± In developing countries, panel regressins do not yield any significant results; in developed countries, there are no significant results in cross section regressions for measures of the guality of government.

Table 3. State executives elected/appointed, cross-section

	Panel A. Subsample of developing and transition countries										Panel B. Subsample of developed countries			
	Quality of Government					Public goods and Growth					Public goods and Growth±			
	Transparency International index for 2001	Government Effectiveness Index	Regulation Quality index	Control over Corruption Index	Rule of Law index	Immunization	Negative of Infant Mortality	Negative of Illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Infant Mortality	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth
Subnational revenue share	0.055	0.057	0.056	0.012	0.0296	0.418	1.858	0.875	0.016	0.058	0.359	0.166	0.016	0.013
(Effect for appointed state executives)	[1.10]	[1.50]	[1.26]	[0.46]	[0.94]	[0.54]	[1.46]	[1.03]	[1.14]	[0.94]	[1.49]	[3.87]***	[1.35]	[3.50]***
CROSSTERM: Subnational revenue share &	-0.062	-0.078	-0.095	-0.047	-0.068	-1.578	-3.074	-1.798	-0.024	-0.134	0.185	-0.156	-0.009	-0.012
Elected state executives (Difference in effects)	[0.61]	[2.37]**	[2.99]***	[1.71]	[2.67]**	[1.36]	[2.00]**	[1.52]	[1.16]	[1.93]*	[0.54]	[3.05]***	[0.74]	[3.25]***
Elected state executives	-0.065	0.944	1.314	0.479	0.726	17.565	47.246	25.304	0.526	1.965	-20.312	2.817	0.171	0.413
	[0.05]	[1.76]*	[2.03]*	[1.24]	[1.42]	[1.02]	[1.70]*	[1.20]	[1.54]	[1.62]	[1.67]	[1.70]	[0.67]	[4.63]***
Logarithm (GDP per capita)	2.039	0.944	0.797	0.599	0.752	6.123	31.938	21.317	0.230	-0.231	7.399	0.956	-0.138	-0.950
	[1.67]	[3.51]***	[2.68]**	[3.45]***	[2.93]***	[1.49]	[3.56]***	[3.01]***	[2.52]**	[0.63]	[0.63]	[1.43]	[0.88]	[18.23]***
Democratic traditions	0.148	-0.003	-0.083	0.112	0.018	0.553	2.215	0.335	-0.011	-0.064	-0.134	0.535	0.033	0.019
	[1.20]	[0.06]	[1.10]	[3.69]***	[0.30]	[0.37]	[0.74]	[0.17]	[0.36]	[0.67]	[0.11]	[2.80]**	[1.20]	[2.70]**
Current level of democracy	-0.065	0.031	0.088	0.0016	0.056	-0.488	-1.637	-0.756	0.009	-0.034	3.051	-1.019	0.135	-0.223
	[0.73]	[0.58]	[1.38]	[0.06]	[1.19]	[0.66]	[0.89]	[0.58]	[0.48]	[0.52]	[0.58]	[1.25]	[0.98]	[4.03]***
Logarithm (Fertility)										-1.743				
										[2.59]**				
Logarithm (Population)	-0.214	-0.158	-0.212	-0.044	-0.090	-3.034	-5.818	-1.330	-0.062	-0.038				
	[0.90]	[0.95]	[1.09]	[0.40]	[0.61]	[1.11]	[1.02]	[0.36]	[1.14]	[0.17]				
Share of protestant	0.021	0.014	0.018	0.011	0.005	-0.119	-0.171	0.173	-0.005	-0.003				
	[1.29]	[2.13]**	[1.89]*	[2.36]**	[0.73]	[0.99]	[0.64]	[0.58]	[1.58]	[0.42]				
Ethnolinguistic fractionalization	-0.575	-0.601	-0.904	-0.557	-0.291	-21.879	-55.302	-19.204	-0.177	-1.199				
	[0.27]	[0.91]	[1.29]	[1.42]	[0.49]	[1.88]*	[2.29]**	[1.11]	[0.58]	[1.36]				
Latitude	0.682	-1.508	-2.767	0.612	-0.424	1.686	-87.267	-43.174	-0.179	-1.002				
	[0.18]	[0.69]	[0.90]	[0.42]	[0.20]	[0.05]	[0.95]	[0.93]	[0.22]	[0.34]				
English legal origin	0.000	0.275	0.000	-0.030	0.000	1.653	-30.597	-17.307	0.382	0.343	-2.399	-1.639	-0.395	-0.155
	[.]	[0.74]	[.]	[0.10]	[.]	[0.19]	[1.80]*	[1.33]	[2.02]**	[0.44]	[0.33]	[1.90]*	[3.55]***	[1.98]*
Socialist legal origin	-0.796	0.000	-0.419	0.000	-0.072	5.703	-27.358	-14.963	0.321	-2.904				
	[0.78]	[.]	[1.07]	[.]	[0.18]	[0.66]	[1.76]*	[1.27]	[1.92]*	[3.88]***				
French legal origin	0.496	0.712	0.614	0.563	0.385	-6.805	-35.564	-21.510	0.096	-0.335				
	[0.28]	[1.38]	[1.77]*	[1.04]	[1.04]	[0.97]	[1.66]	[2.06]**	[0.59]	[0.72]				
Fixed investments										0.035				
										[2.12]**				
Openness										0.001				0.007
										[0.08]				[8.38]***
Observations	29	37	37	37	37	70	70	64	70	70	22	22	21	22
Number of countries														
R-squared											0.82	0.87	0.54	0.96
Subnational revenue share in adjacent regressions	-0.007	-0.021	-0.039	-0.036	-0.038	-1.159	-1.216	-0.922	-0.008	-0.076	0.544	0.010	0.007	0.001
(Effect for elected state executives)	[0.09]	[0.71]	[1.34]	[1.43]	[1.62]	[1.38]	[1.19]	[1.31]	[0.52]	[2.09]**	[2.36]**	[0.41]	[1.92]*	[0.23]

*Note: Absolute values of robust t-statistics in parenthesis. *** - significant at 1% level;** - significant at 5% level;* - significant at 10% level. In cross-country regressions for developed countries, the number of control variables is decreased to provide additional degrees of freedom. Regressions with the full set of control variables provide consisten results (section 5.1).*

± There are no significant results for the quality of government in developed countries.

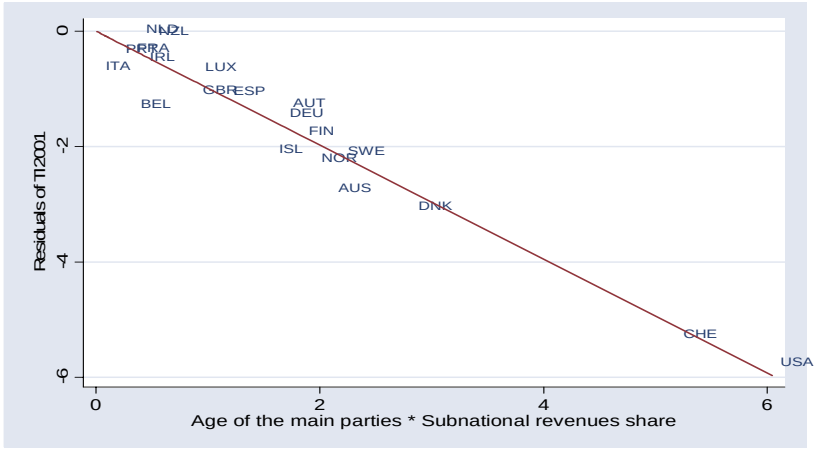
Table 4. Municipal executives appointed/elected, cross-section

	Panle A. Developing and transition countries						Panel B. Developed countries				
	Quality of Government, Public goods and Growth						Quality of Government, Public goods and Growth				
	Regulation Quality	Immunization	Negative of Infant Mortality	Negative of Illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Government Effectiveness Index	Immunization	Negative of Infant Mortality	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth
Subnational revenue share	0.047	0.652	2.206	1.545	0.029	0.064	-0.031	0.622	0.122	0.028	0.004
(Effect for appointed municipal executives)	[0.80]	[0.61]	[1.37]	[1.36]	[1.62]	[1.36]	[1.55]	[2.10]*	[3.95]***	[5.12]***	[2.06]*
CROSSTERM: Subnational revenue share &											
Elected municipal execut-s (Difference in effects)	-0.048	-1.626	-2.063	-1.853	-0.026	-0.097	0.036	-0.113	-0.100	-0.022	-0.002
	[1.79]*	[1.77]*	[1.23]	[1.31]	[1.27]	[1.94]*	[1.86]*	[0.33]	[3.50]***	[4.52]***	[1.11]
Elected municipal executives	1.328	16.043	46.790	32.748	0.562	1.493	-0.951	-6.698	2.150	0.356	0.229
	[1.04]	[0.89]	[1.67]	[1.35]	[1.72]*	[1.81]*	[1.67]	[0.59]	[2.54]**	[1.91]*	[4.11]***
Logarithm (GDP per capita)	0.343	3.657	24.953	19.478	0.215	-0.383	0.067	1.674	0.487	-0.147	-0.962
	[2.06]**	[0.85]	[3.44]***	[2.97]***	[2.21]**	[1.63]	[0.09]	[0.15]	[0.62]	[0.86]	[17.23]***
Democratic traditions	-0.003	0.723	4.764	1.536	0.012	0.024	-0.078	0.557	0.662	0.039	0.032
	[0.04]	[0.61]	[2.88]***	[0.95]	[0.53]	[0.57]	[1.04]	[0.48]	[2.65]**	[1.20]	[2.63]**
Current level of democracy	0.026	0.331	-2.327	-0.923	-0.005	0.008		-4.46	-0.264	0.122	-0.027
	[0.74]	[0.34]	[1.61]	[0.62]	[0.29]	[0.14]		[0.61]	[0.40]	[1.18]	[0.61]
Logarithm (Fertility)						-1.109					
						[2.42]**					
Logarithm (Population)	-0.170	1.369	-4.859	0.220	-0.061	0.158	0.012				
	[0.58]	[0.34]	[1.09]	[0.07]	[1.07]	[1.08]	[0.22]				
Share of protestant	0.020	0.105	-0.162	0.169	0.000	0.007	-0.001				
	[2.68]**	[0.55]	[0.52]	[0.40]	[0.12]	[0.82]	[0.44]				
Ethnolinguistic fractionalization	-1.186	-17.937	-49.755	-18.863	-0.311	-1.225					
	[1.75]*	[1.15]	[1.76]*	[0.72]	[0.80]	[1.63]					
Latitude	-3.125	41.253	-51.907	-18.406	-0.208	1.330	0.781				
	[0.90]	[0.87]	[0.86]	[0.48]	[0.33]	[0.64]	[1.30]				
English legal origin	0.000	11.459	-33.554	-11.271	0.359	0.421		-10.275	-2.213	-0.406	-0.118
	[.]	[0.87]	[1.58]	[0.53]	[1.27]	[0.60]		[1.55]	[3.11]***	[2.20]**	[1.56]
Socialist legal origin	-0.193	15.064	-24.120	-13.774	0.346	-2.080					
	[0.35]	[1.48]	[2.48]**	[1.54]	[2.49]**	[6.49]***					
French legal origin	-0.188	13.980	-31.806	-13.598	0.179	0.378	-0.693				
	[0.32]	[0.98]	[1.67]	[0.80]	[0.77]	[0.59]	[2.55]**				
Fixed investments						0.029					
						[1.80]*					
Openness						0.002					0.005
						[0.59]					[3.53]***
Observations	42	70	70	63	70	70	20	21	21	20	21
Number of countries											
R-squared							0.58	0.46	0.75	0.56	0.94
Subnational revenue share in adjacent											
regressions	-0.001	-1.197	-0.104	-0.434	0.000	-0.045	0.005	0.544	0.010	0.007	0.001
(Effect for elected municipal executives)	[0.02]	[1.63]	[0.14]	[0.62]	[0.00]	[1.57]	[0.65]	[2.36]**	[0.41]	[1.92]*	[0.23]

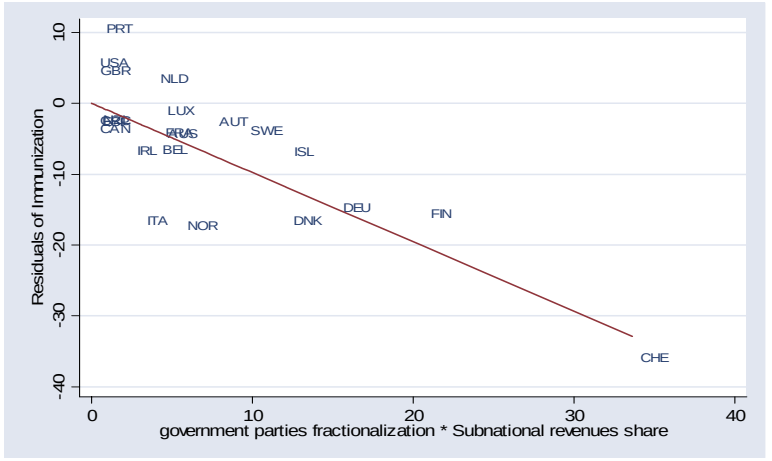
*Note: Absolute values of robust t-statistics in parenthesis. *** - significant at 1% level;** - significant at 5% level;* - significant at 10% level. In cross-country regressions for developed countries, the number of control variables is decreased to provide additional degrees of freedom. Regressions with the full set of control variables provide consisten results (section 5.1).*

± There are no significant results with measures of quality of government except for the government effectiveness index in developed countries subsample.

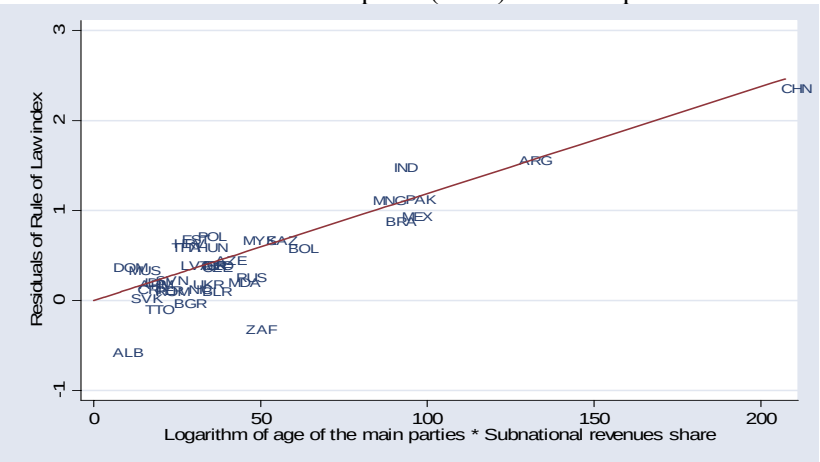
Figure 1



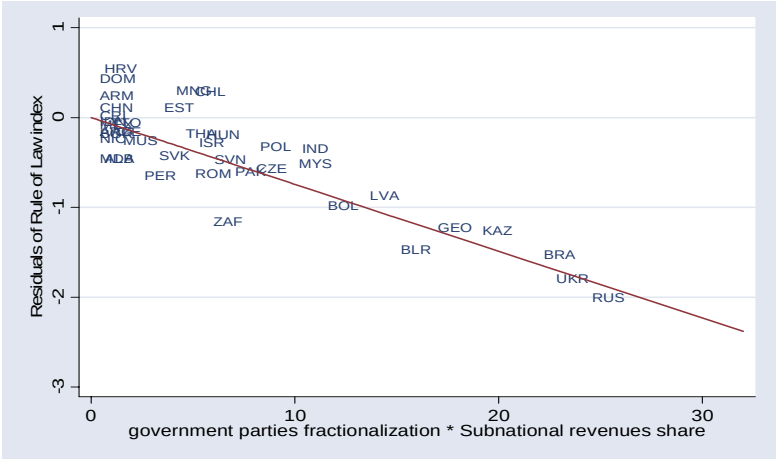
Party age and effect of decentralization on Transparency International index of corruption (2001) in developed countries



Fractionalization of government parties and effect of decentralization on the immunization in developed countries.

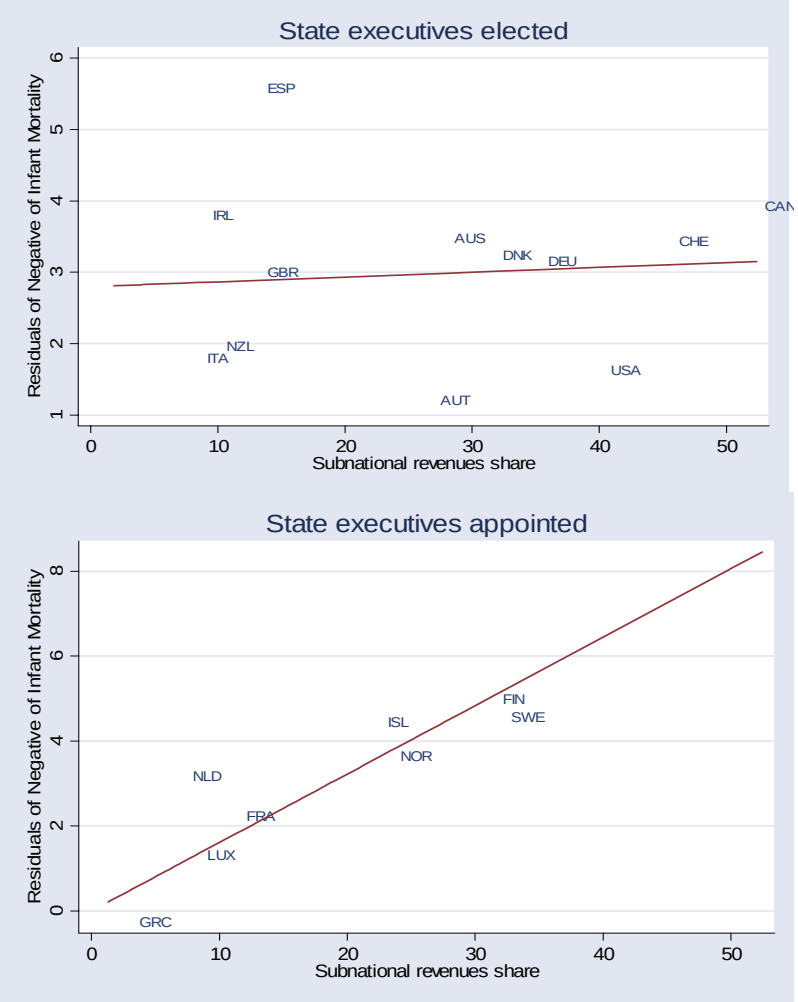


Party age and effect of decentralization on the rule of law index in developing and transition countries

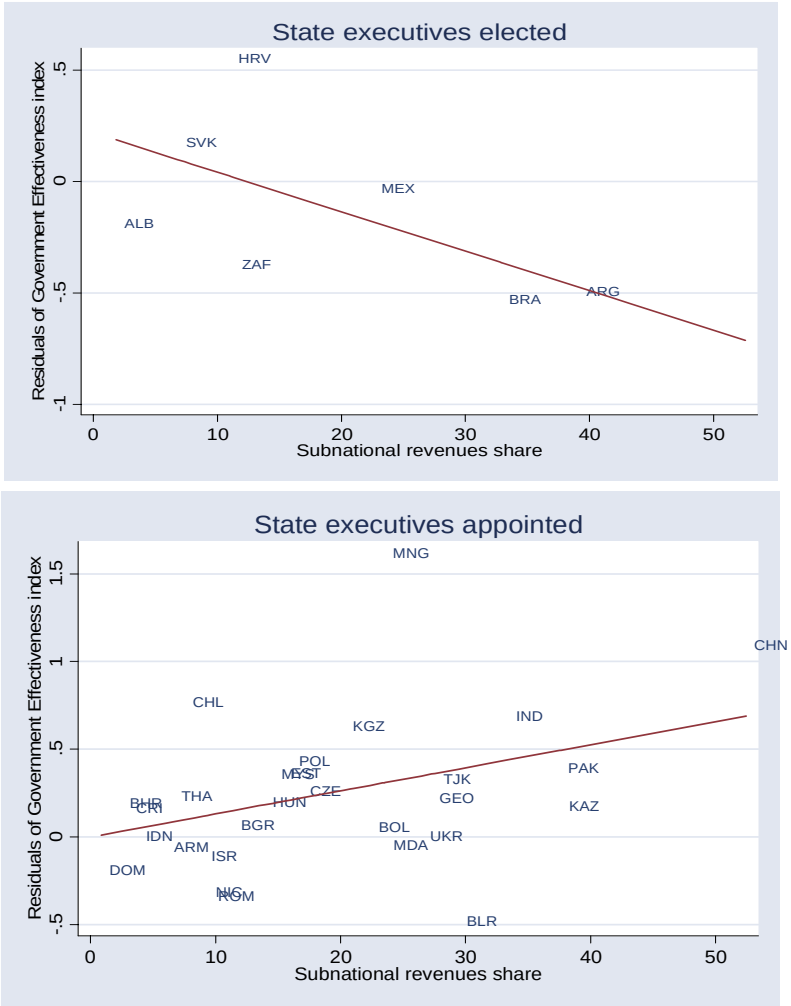


Fractionalization of government parties and effect of decentralization on the rule of law index in developing and transition countries

Figure 2



State executives elected/appointed and effect of decentralization on infant mortality in developed countries



State executives elected/appointed and effect of decentralization on the government effectiveness index in developing and transition countries

APPENDIX

Table A1. Countries included in the sample

Subsample of developing and transition countries		
Albania	Ethiopia	Papua NG
Argentina	Fiji	Paraguay
Armenia	Gambia	Peru
Azerbaijan	Georgia	Philippines
Bahrain	Guatemala	Poland
Bangladesh	Honduras	Romania
Belarus	Hungary	Russia
Benin	India	Senegal
Bolivia	Indonesia	Slovakia
Botswana	Iran	Slovenia
Brazil	Israel	S Africa
Bulgaria	Jordan	Sri Lank
Burkina Faso	Kazakhstan	Tajikistan
Cameroon	Kenya	Thailand
Chile	South Korea	Trinidad and Tobago
China	Latvia	Tunisia
Colombia	Malawi	Turkey
Costa Rica	Malaysia	Uganda
Croatia	Mauritius	Ukraine
Cyprus	Mexico	Uruguay
Czech Republic	Moldova	Venezuela
Dom Republic	Mongolia	Zambia
Ecuador	Nicaragua	Zimbabwe
El Salvador	Pakistan	
Estonia	Panama	
Subsample of developed countries (members of the Development Assistance Committee of OECD and Iceland)		
Australia	Greece	Portugal
Austria	Iceland	Spain
Belgium	Ireland	Sweden
Canada	Italy	Switzerland
Denmark	Luxemburg	UK
Finland	Netherlands	USA
France	New Zealand	
Germany	Norway	

Table A2. Description of the variables

Variable	Description
Subnational revenue share	Share of revenues of all subnational governments in total revenues of consolidated central budget measured in percents. Scale from 0 to 100. *Source: Database on Fiscal Indicators, by the World Bank, based on IMF's Government Finance Statistics. Data from Government Finance Statistics 2001 was added. For Armenia, Korea, and Pakistan data were added using information from national statistical offices.*
Subnational expenditure share	Share of expenditures of all subnational governments (net of transfers to other levels of government) in total expenditures of consolidated central budget measured in percents. Scale from 0 to 100. *Source: Database on Fiscal Indicators[47], by the World Bank, based on IMF's Government Finance Statistics. Data from Government Finance Statistics 2001 was added. For Armenia, Korea, and Pakistan data were added using information from national statistical offices.*
Fractionalization of government parties	The probability that two members of parliament picked at random from among the government parties will be of different parties. Missing if there is no parliament, if there are any government parties where seats are unknown or if there are no parties in the legislature. Scale from 0 to 1. *Source: Database on Political Institutions, Version 3, (Beck et al., 2001).*
Fractionalization of parliament	The probability that two members of parliament picked at random from the legislature will be of different parties. Missing if there is no parliament, if there are no parties in the legislature and if any government or opposition party seats are missing. Scale from 0 to 1. *Source: Database on Political Institutions, Version 3 (Beck et al., 2001).*
Party age	This is the average of the ages of the first government party, second government party, and 1st opposition party, or the subset of these for which age of party is known. The variable is measured in thousands of years. *Source: Database on Political Institutions, Version 3 (Beck et al., 2001).*
Elected municipal executives	Equals one if local executive is locally elected. Equals zero otherwise. No information, or no evidence of municipal governments, is recorded as missing. If one source has information on a specific period, and the other has no information on a different period, we do not extrapolate from one source to another - no information is always recorded as missing. If there are multiple levels of sub-national government, we consider the lowest level as the "municipal" level. *Source: Database on Political Institutions, Version 3 (Beck et al., 2001), updated using Nickson (1995) and various other sources.*
Elected state/province executives	Equals one if state/province executive is locally elected. Equals zero otherwise. If there are multiple levels of sub-national government, we consider the highest level as the "state/province" level. Indirectly elected state/province governments, where directly elected municipal bodies elect the state/province level, are not considered locally elected. Indirectly elected state/province governments elected by directly elected state/province bodies are considered locally elected. *Source: Database on Political Institutions, Version 3 (Beck et al., 2001), updated using Nickson (1995) and various other sources.*

Continued.

[47] Database can be found at http://www1.worldbank.org/publicsector/de centralization/dataondecen.htm.

Table A2. Continued.

Variable	Description
Control over corruption	A governance indicator that reflects the statistical compilation of perceptions of corruption, conventionally defined as the exercise of public power for private gain, of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. *Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).*[48]
Government effectiveness	A governance indicator that reflects the statistical compilation of perceptions of the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures and the credibility of government's commitment to policies of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. *Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).*
Regulation quality	A governance indicator that reflects the statistical compilation of perceptions of the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well as perception of the burdens imposed by excessive regulation in areas such as foreign trade and business development of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. *Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).*
Rule of law	A governance indicator that reflects the statistical compilation of perceptions of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. *Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).*
Corruption indices	The Transparency International Corruption Perceptions Indexes for years 2000 and 2001 respectively. Scale from 0 to 10, with higher values corresponding to better governance outcomes. *Source: Transparency International*[49]
Immunization	Immunization, DPT (% of children under 12 months). Child immunization measures the rate of vaccination coverage of children under one year of age. A child is considered adequately immunized against diphtheria, pertussis (or whooping cough), and tetanus (DPT) after receiving three doses of vaccine. Scale from 0 to 100. *Source: World Development Indicators 2001, by the World Bank*
Infant mortality	Infant mortality rate is the number of infants dying before reaching one year of age, per 1000 live births in a given year. *Source: World Development Indicators 2001, by the World Bank*
Illiteracy	Adult illiteracy rate is the percentage of people aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life. Scale from 0 to 100. *Source: World Development Indicators 2001, by the World Bank*
Pupil to teacher ratio	Primary school pupil-teacher ratio is the number of pupils enrolled in primary school divided by the number of primary school teachers (regardless of their teaching assignment). *Source: World Development Indicators 2001, by the World Bank*

Continued.

[48] Paper can be found at http://www.worldbank.org/wbi/governance/pdf/govmatters2.pdf.

[49] Indices can be found at http://www.gwdg.de/~uwvw/.

Table A2. Continued.

Variable	Description
Fixed investments	Gross fixed capital formation (% of GDP). Gross fixed capital formation (gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. *Source: World Development Indicators 2001, by the World Bank*
GDP per capita, PPP	GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars. *Source: World Development Indicators 2001, by the World Bank*
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship-except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. *Source: World Development Indicators 2001, by the World Bank*
Openness	Error term from the linear regression of the share of export and import in GDP (measured in percent) on the area and population of the country. *Source: Constructed based on data from World Development Indicators 2001, by the World Bank*
Fertility	Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates *Source: World Development Indicators 2001, by the World Bank*
Current level of democracy	Index of democracy. Scale from 0 to 10 with higher values corresponding to more democratic outcomes. *Source: Polity IV Dataset.*
Democratic traditions	Average index of democracy for the last 50 years. Scale from 0 to 10 with higher values corresponding to more democratic outcomes. *Source: constructed based on data from Polity IV Dataset.*
Ethnolinguistic fractionalization	Index of ethnolinguistic fractionalization for the year 1985. Its value ranges from 0 to 1. *Source: Roeder, P. G. (2001).*[50]
Share of protestants	Identifies the percentage of the population of each country that belonged to the Protestant religion in 1980. Scales from 0 to 100. *Source: La Porta et al. (1999).*
Latitude	The absolute latitude of the country, scaled to take values between 0 and 1. *Source: La Porta et al. (1999).*
Legal origin	Identifies the legal origin of the company law or commercial code of the country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; (5) Socialist/Communist laws. *Source: La Porta et al. (1999).*

[50] Philip Roeder, G. (2001). "Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985," February 16. The index can be found at http://weber.ucsd.edu/~proeder/elf.htm.

Table A3. Summary statistics for the measures of fiscal decentralization, political institutions, and dependent variables (average values for counties are summarized)

Variable	# of obs	Mean	SD	Min	Max
Subsample of developing and transition countries					
Share of subnational expenditures	83	17.74	14.94	1.74	68.31
Share of subnational revenues	84	15.08	14.23	1.07	66.96
Municipal executives elected	124	0.51	0.46	0	1
State executives elected	141	0.17	0.34	0	1
Fractionalization of governing parties	155	0.39	0.3	0	1
Fractionalization of parliament	155	0.18	0.24	0	1
Fractionalization of opposition parties	121	0.48	0.26	0	1
Average age of main parties	142	0.02	0.02	0	0.15
Level of DPT immunization	178	68.6	19.94	14.18	99.75
Negative of logarithm of infant mortality	180	-3.66	0.82	-5.19	-1.95
Negative of illiteracy level	135	-31.44	24.52	-89.38	-0.2
Negative of logarithm of pupil to teacher ratio	167	-3.32	0.39	-4.21	-2.26
Transparency International index of corruption for the year 2001	68	3.72	1.64	0.4	9.5
Transparency International index of corruption for the year 2000	67	3.68	1.56	1.2	9.1
Index of government effectiveness	137	-0.25	0.77	-2.34	2.16
Index of regulation quality	146	-0.16	0.82	-2.95	1.82
Index of control over corruption	138	-0.27	0.7	-1.47	2.13
Index of rule of law	147	-0.23	0.76	-2.17	1.85
Subsample of developed countries					
Share of subnational expenditures	22	28.7	14.51	4.06	57.68
Share of subnational revenues	22	21.17	14.41	3.11	52.36
Municipal executives elected	22	0.82	0.39	0	1
State executives elected	23	0.59	0.49	0	1
Fractionalization of governing parties	23	0.67	0.1	0.48	0.83
Fractionalization of parliament	23	0.29	0.24	0	0.74
Fractionalization of opposition parties	23	0.46	0.21	0.003	0.85
Average age of main parties	23	0.06	0.03	0.01	0.14
Level of DPT immunization	23	83.88	12.87	46.44	99
Negative of logarithm of infant mortality	23	-2.14	0.26	-2.78	-1.74
Negative of logarithm of pupil to teacher ratio	22	-2.75	0.34	-3.27	-1.91
Transparency International index of corruption for the year 2001	23	7.87	1.39	4.2	9.9
Transparency International index of corruption for the year 2000	23	7.89	1.51	4.6	10
Index of government effectiveness	23	1.47	0.38	0.65	1.93
Index of regulation quality	23	1.05	0.29	0.58	1.5
Index of control over corruption	23	1.61	0.48	0.63	2.25
Index of rule of law	23	1.52	0.36	0.62	1.91

Table A4. Correlation coefficients of the indicators of .developing and transition countries (for average country values)

	Share of subnational expenditures	Share of subnational revenues	Municipal executives elected	State executives elected	Fractionalization of parliament	Fractionalization of governing parties
Subsample of developing and transition countries						
Share of subnational revenues	0.956[a]					
Municipal executives elected	-0.052	-0.178				
State executives elected	-0.016	-0.107	0.434[a]			
Fractionalization of parliament	-0.045	-0.057	0.174[c]	0.014		
Fractionalization of governing parties	-0.05	-0.055	0.029	-0.061	0.773[a]	
Average age of main parties	0.007	-0.038	-0.018	0.082	-0.183[b]	-0.193[b]
Subsample of developed countries						
Share of subnational revenues	0.943[a]					
Municipal executives elected	0.339	0.334				
State executives elected	0.417[c]	0.352	0.550[a]			
Fractionalization of parliament	0.085	0.006	-0.206	-0.408[c]		
Fractionalization of governing parties	0.112	0.074	-0.194	-0.364[c]	0.899[a]	
Average age of main parties	0.709[a]	0.705[a]	0.319	0.418[b]	-0.162	-0.104

a- significant at 1% level; b- significant at 5% level; c- significant at 10% level

Table A5. F-tests from the first-stage regressions

	Government quality regressions			
	Interaction term with Subnational Revenues	Subnational Revenues	Interaction term with Subnational Revenues	Subnational Revenues
Subsample of developing and transition countries				
Fractionalization of government parties	2	5.8	14.5	3.7
Age of main parties	6.9	5.6	46.3	5.1
Municipal executives elected	3	2.7	4.2	1.5
State executives elected	42	11	27.7	4.5
Subsample of developed countries				
Fractionalization of government parties	3.6	8.8	0.4	13.5
Age of main parties	0.03	10.1	2.4	13.7
Municipal executives elected	3	10.7	5.9	16.5
State executives elected	4	2.4	8.5	8.6

Table A6: Summary of results

			CROSS SECTION										PANEL			
			Transparency International	Government Effectiveness	Regulation Quality	Control over Corruption	Rule of Law	GDP growth	Immunization	Negative of Infant Mortality	Negative of Illiteracy	Negative of Log Pupil to Teach Ratio	Immunization	Negative of Infant Mortality	Negative of Illiteracy	Negative of Log Pupil to Teach Ratio
Party strength	Developing	gov_frac* rev_dec	-	-***	-***	-**	-***	-***	-***	-***	-**	-***	0	+	0	0
		party_age* rev_dec	0	+*	+*	+**	+**	+***	+*	+***	+	+	+***	0	0	+***
	Developed	gov_frac* rev_dec	0	0	0	0	0	0	-**	0	N/A	-	0	0	N/A	-***
		party_age* rev_dec	-***	-*	-	-**	-**	-**	0	-***	N/A	0	-**	-	N/A	+
Subordination	Developing	state_elect* rev_dec	0	-**	-***	-	-**	-*	-	-**	-	-	0	+*	+**	+***
		muni_elect* rev_dec	0	0	-*	0	0	-*	-*	-	-	-	0	0	0	+***
	Developed	state_elect* rev_dec	0	0	0	0	0	-***	0	-***	N/A	0	0	-**	N/A	+*
		muni_elect* rev_dec	+	+*	+	0	+	-	0	-***	N/A	-***	+	+	N/A	+***

*Note: Zeros represent coefficients with t-statistics smaller than unity; * significant at 10%; ** significant at 5%; *** significant at 1%*
- denotes non-robust results that depend on influential observations or particular set of controls (see section 5.1).